

Abstract

Optical phase detection includes generating a first lightwave having a first polarization and a second lightwave having a polarization that is offset from the first polarization, and imposing a relative delay between the first and second lightwaves. The
5 relative delay causes a frequency offset between the lightwaves as wavelength is tuned over a designated wavelength range. Directing the first and second lightwaves to a target provides a third lightwave and a fourth lightwave. A polarization component of the third lightwave and a polarization component of the fourth lightwave are detected to provide a detected signal at the frequency offset. The optical phase detection then includes
10 extracting a phase difference, induced by the target, between the polarization components of the third and the fourth lightwaves.